CLAIMS

What is claimed is:

1.   An input/output interface suitable for communicatively coupling a host with a target device, comprising:

5   at least one port communicatively coupling the input/output interface with a host;

                at least one port communicatively coupling the input/output interface with a
                        target; and

                a controller communicatively coupled to the at least one port communicatively
                        coupling the input/output interface with the host and the at least one port

10   communicatively coupling the input/output interface with the target,
                        wherein the controller receives an identifier from the host, the identifier
                        indicating the target's address, the controller generates a logical identifier
                        from the identifier, the logical identifier suitable for being utilized in
                        conjunction with a look-up table to provide access to the target,

15   wherein the target is selectively allocated to one and only one host.

2.   The input/output interface as described in claim 1, wherein the controller
        generates the logical identifier by shifting at least one of a bus field and ID field
        to create a linear value.

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3.   The input/output interface as described in claim 2, wherein the bus field of the
        identifier is shifted to create a linear value with the ID field.

4.   The input/output interface as described in claim 2, wherein a number of shifts
25   performed is based upon a number of Id fields per bus field supported by an OS
        operating on the host.

5.   The input/output interface as described in claim 2, wherein at least one of the bus
        field and the ID field is 8-bits.

6. The input/output interface as described in claim 1, wherein the logical identifier is utilized to index the look-up table.

5 7. The input/output interface as described in claim 1, wherein the target is selectively allocated by a target masking configuration utility.

8. The input/output interface as described in Claim 7, wherein the target masking configuration utility is implemented as a software program.

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9. The input/output interface as described in Claim 7, wherein the target masking configuration utility communicates with at least one other target masking configuration utility.

15 10. The input/output interface as described in Claim 9, wherein the target masking filter is wholly contained within the input/output interface and communicates with at least one other host through an agent contained within the input/output interface.

20 11. The input/output interface as described in Claim 10, wherein the agent of the input/output interface is in communication with other agents of other input/output interfaces of other hosts.

12. The input/output interface as described in Claim 11, wherein the communication
25 is through a local area network (LAN).

13.   A method for providing data transfer between a host with a target utilizing an input/output interface, comprising:

   receiving an identifier including a bus field and an ID field from the host;

   generating a logical identifier from the received identifier;

5   referencing a look-up table utilizing the logical identifier to provide access to the target; and

   allocating the target to the input/output interface via integrated target masking.

14.   The method as described in claim 13, wherein generating includes shifting at least

10   one of the bus field and the ID field to form a linear value.

15.   The method as described in claim 14, wherein the bus field of the identifier is shifted to create a linear value with the ID field.

15   16.   The method as described in claim 14, wherein a number of shifts performed is based upon a number of Id fields per bus field supported by an OS operating on the host.

17.   The method as described in claim 13, wherein at least one of the bus field and the

20   ID field is 8-bits.

18.   The method as described in claim 13, wherein referencing includes utilizing the logical identifier to index the look-up table.

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19.   An input/output interface suitable for communicatively coupling a host with a target device, comprising:

at least one port communicatively coupling the input/output interface with a host;

at least one port communicatively coupling the input/output interface with a target; and

a controller communicatively coupled to the at least one port communicatively coupling the input/output interface with the host and the at least one port communicatively coupling the input/output interface with the target, wherein the controller receives an identifier including a bus field and an ID field from the host, the controller shifts at least one of the bus field and the ID field into a linear value to generate a logical identifier, the logical identifier suitable for being utilized in conjunction with a look-up table to provide access to the target, the controller including a target masking configuration utility.

20.   The input/output interface as described in claim 19, wherein a number of shifts performed is based upon a number of Id fields per bus field supported by an OS operating on the host.

21.   The input/output interface as described in claim 19, wherein at least one of the bus field and the ID field is 8-bits.

22.   The input/output interface as described in claim 19, wherein the logical identifier is utilized to index the look-up table.

23. An input/output interface suitable for communicatively coupling a host with a target device, comprising:

  at least one means for communicatively coupling the input/output interface with a

5   host;

  at least one means for communicatively coupling the input/output interface with a

    target; and

  a means for controlling communicatively coupled to the at least host coupling

    means and the at least one target coupling means, wherein the controlling

10   means receives a means for identifying including a bus field and an ID

    field from the host, the controlling means generates a means for logically

    identifying from the received identifying means, the logical identifying

    means suitable for being utilized in conjunction with a look-up table to

    provide access to the target, the controlling means including a target

15   masking configuration utility which selectively assigns the target to one of

    two or more hosts so that the look-up table is populated with fewer targets

    than a maximum number of targets.

24. The input/output interface as described in claim 23, wherein the controlling means

20 generates the logical identifying means by shifting at least one of the bus field and

 ID field to create a linear value.

25. The input/output interface as described in claim 24, wherein a number of shifts

 performed is based upon a number of Id fields per bus field supported by an OS

25 operating on the host.

26. The input/output interface as described in claim 23, wherein the logical identifier

 is utilized to index the look-up table.

27. A multihost system, comprising:

a plurality of targets;

a plurality of input/output interfaces, each input/output interface being coupled to a host and at least one of the plurality of targets, each input/output interface having a target masking configuration utility for allocating at least one of the plurality of targets to the input/output interface; and

one of the group consisting of a fabric, a loop, or a combination of a fabric and a loop which allows communications between the plurality of input/output interfaces and the plurality of targets,

wherein the targets allocated to an input/output interface are fewer than all the plurality of targets.

28. The multihost system of Claim 27, each of the plurality of input/output interfaces having a controller communicatively coupled to at least one port communicatively coupling the input/output interface with the host and at least one port communicatively coupling the input/output interface with the target, wherein the controller receives an identifier from the host, the identifier indicating the target's address, the controller generates a logical identifier from the identifier, the logical identifier suitable for being utilized in conjunction with a look-up table to provide access to the target.

29. The multihost system of Claim 28, wherein only those targets which pass a user defined filter are entered into the look-up table which uses the logical identifier so as to mask the visibility of those targets from the host.

30. The multihost system of Claim 27, the input/output interface further comprising an agent for communicating with agents of other input/output interfaces.

31. The multihost system of Claim 30, wherein only one input/interface has the target

masking configuration utility.

32. The multihost system of Claim 30, wherein a local area network provides the means of communication between the agents of the plurality of input/output interfaces.

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33. The multihost system of Claim 27, wherein each of the plurality of input/output interfaces has a target masking configuration utility.

10 34. The multihost system of Claim 33, wherein the target masking configuration utilities are in communication with each other through the one of the group consisting of a fabric, a loop, or a combination of a fabric and a loop.

35. The multihost system of Claim 27, wherein each of the plurality of input/output interfaces is allocated with a single target in a one-to-one correspondence.

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36. The multihost system of Claim 27, wherein at least one of the plurality of input/output interfaces is allocated with two or more targets.

20 37. The multihost system of Claim 36, wherein at least one target is allocated to two or more input/output interfaces.

38. The multihost system of Claim 27, wherein the allocation of the target to an input/output interface causes that target to appear invisible to the host coupled to the input/output interface.

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39. The multihost system of Claim 27, wherein the allocation of the target to an input/output interface causes that target to appear invisible to the host coupled to the input/output interface.

40.   A method for selectively masking targets in a multihost environment, comprising:

determining whether a target has been allocated to a host; and

if the target has been allocated, then determining whether the target is to be disallocated, otherwise, proceeding to the next target.

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41.   The method of Claim 40, if it is determined that the target is to be disallocated, disallocating the target, otherwise, allocating the target according to a user defined rule.

10   42.   The method of Claim 41, if a target is allocated to more than one input/output interfaces, then assigning a priority order for the target.